Special Conditions and Technical Specifications for Glade Mountain Reclamation Project

Smyth County, Virginia

Prepared by:
Commonwealth of Virginia Department of Mines, Minerals, and Energy
Division of Mineral Mining

Contents

SPECIAL CONDITIONS

Section 1: Overview

All of the following parts considered, as a whole, shall comprise the complete specifications. They are complementary and anything called for by one and not the others shall be considered binding as though called for by all.

1.1 Bid Package (General Clauses, General Conditions, Notice and Instructions to Bidders, etc.)
1.2 Special Conditions
1.3 Construction Specifications
1.4 Exhibits

Section 2: Definitions

2.1 The word "Agency" shall mean the Commonwealth of Virginia, Department of Mines, Minerals and Energy, Division of Mined Land Reclamation.

2.2 Where the word "Contract" is used, it shall be understood to refer either to a purchase order placed by the Agency and accepted by the Contractor together with this specification and all other documents referred to in such purchase order; or to a formal contract executed by the Agency and the Contractor, together with this specification and other documents referred to in such formal contract.

2.3 The word "Contractor" means the person, firm or corporation named as such in the contract and includes the plural number and the feminine gender when such are named in the contract as the Contractor.

2.4 The word "Subcontractor" means only those having a direct contract with the Contractor and it includes one who furnishes material worked to a special design but does not include one who merely furnishes material not so worked.

2.5 Where the word "Work" is used, it shall be understood to mean and include any and all labor, supervision, services, materials, machinery, equipment, tools, supplies and facilities called for by, and to complete, the Contract.

Section 3: Scope of Work

3.1 The work to be performed under the terms of these Specifications consists of installation of sediment control, site preparation, access road construction, repairing a gabion channel, straightening and stabilizing the existing pond discharge channel via the installation of gabion baskets, tying the pond discharge channel into the gabion channel, repairing a pond inlet, constructing a steel closure over a drainage structure, and revegetation on the site known as the **Glade Mountain Reclamation Project** for the Commonwealth of Virginia.

3.2 The intent of these Specifications is to prescribe the complete work to be performed. The specifications are written to permit and direct the work to be conducted by the Contractor's forces. If there are any contradictions between the Specifications and Drawings, the Contractor shall bring these facts to the attention of the Agency and obtain the Agency's decision as to the true meaning and intention before proceeding.

A. The Contractor remains responsible for timely identification of any conflicts as may be found and bringing such to the attention of the Agency.
B. In absence of a formal written response from the Agency, or in the event Contractor fails to bring such to the attention of the Agency, Contractor is responsible to have complied with the most stringent requirement.

Section 4: Time Schedule

4.1 The Work shall be executed with sufficient personnel, equipment and material to complete work and submit final invoice within **45 days**.

Section 5: Work by Contractor

The Contractor shall:

5.1 Furnish all supervision, labor, materials, tools and equipment necessary to perform all work. The work shall consist principally of the following:

- 5.1.1 Construct erosion and sediment control measures as directed.
- 5.1.2 Install access roads as specified by Project Inspector.
- 5.1.3 Repair existing gabion channel.
- 5.1.4 Reroute and stabilize the pond discharge channel via the installation of gabion baskets to flow into gabion channel
- 5.1.5 Construct a steel cover over drainage structure
- 5.1.6 Repair inlet of lower pond
- 5.1.7 Revegetate all disturbed areas

5.2 Be responsible for receiving, unloading, storing, protecting and handling all materials and equipment furnished by the Contractor or the Agency for the execution of all work under this Specification.

5.3 Be responsible for demurrage or claims incurred because of negligence in expediting the unloading of materials or equipment.

5.4 Replace any defective material furnished by the Contractor or any defective work performed by the Contractor's forces at the Contractor's own expense.

5.5 Furnish to the Agency for approval before start of work, a Schedule of Work and procedure for construction of the work covered by the contract.

5.6 Be responsible for scheduling, expediting, directing, inspecting and coordinating the work so as to complete the work in the time agreed upon. The Contractor shall immediately notify the Agency of any impending problems which could delay the completion of the work.

5.7 Before starting the work, contact the Agency for proper clearance and be governed by the Agency's instructions.

5.8 Be responsible for locating, relocating and protecting from damage existing underground and overhead utilities when such utilities are clearly visible. Be responsible for verifying the location of all utilities, pipes, etc., before initiating the work.

5.9 Confine all workers to the construction area.

5.10 Provide drinking water and containers.

5.11 Provide watchmen, safety barricades, lights, signs and other items necessary for layout and installation of the work.

5.12 Furnish all labor, stakes, templates and tools and perform all field surveying and engineering to establish construction quantities and the lines and grades necessary for layout and installation of the work.

5.13 Be completely familiar with the location and accessibility of various construction and storage sites to determine the best material and equipment handling methods for the orderly completion of the work.

5.14 Have on the work site during construction a competent superintendent, duly authorized to represent and act for the Contractor in all matters pertaining to the work covered by this Specification.

5.15 Not perform any additional or temporary work for the Agency's account unless on specified written orders, signed by the Agency's authorized representative and Contractor and only in the amounts of the various types of work specified in said orders.

5.16 Work in close cooperation with the Agency and others engaged in the project so that the work shall be completed with dispatch and in an orderly manner.

5.17 Continuously maintain adequate weather and fire protection of all the Contractor's work from damage and shall protect property from damage or loss arising in connection with this contract. The Contractor shall make good any such damage or loss.

5.18 Comply with the provisions of the Occupational Safety and Health Act of 1970, Public Law 91-596, 29 CFR and 30 CFR; and the Safety Codes Commission of the Commonwealth of Virginia, issued by the Department of Labor and Industry under Title 40.1 of the Code of Virginia (1950), as amended. The Contractor shall be held liable to the Agency for any health and/or safety infractions, on the Contractor's part, which cause the Agency or surface owner to receive a citation and/or fine from any local, state or federal agency. Actual costs involved shall require satisfaction, by the Contractor, to the Agency or surface owner.

5.19 Maintain the site of work in an orderly manner. The Contractor shall provide personnel and supervision to continuously clean up the construction area under this jurisdiction. Should the Contractor refuse or fail to clean up or remove debris when requested by the Agency, it is understood that the Agency may employ others to do this work, and without further authority withhold the cost thereof from any payment due the Contractor.

5.20 Dispose of all debris and waste resulting from work at a disposal site approved by the Agency. The Contractor shall comply with all Department of Environmental Quality requirements concerning the use, handling and disposal of petroleum products, working in or near streams and wetlands, burning or releasing emissions into the air and disposal of solid waste and hazardous or toxic waste. The Contractor shall not put or spill any materials into any drainage system, which would pollute area streams or waterways. The Contractor shall be liable for any pollution caused directly or indirectly by the Contractor's employees or those of any subcontractors.

5.21 Furnish all special apparatus, welding machines, air compressors, hoisting equipment, tools, implements, cartage, scaffolding, ladders, planks, acetylene gas, oxygen gas, expendable materials, temporary light and heat, construction materials, shims and all other materials that may be required for the proper completion of the work.

5.22 Furnish electrical power, gas, compressed air and any other utilities required for the Contractor's use during construction. The Contractor shall remove all temporary wiring, switches, lights, piping and connections to service facilities used during construction. Such connections shall not be made without approval of the Agency.

5.23 Provide temporary supports as may be required during construction including those necessary to ensure the stability of the proposed excavation or working under mine roofs.

5.24 Not be permitted to drive any crawler type equipment or rollers on any paved roads except on rubber tire floats or similar vehicles. The Contractor shall protect pavement when it is necessary to move such type equipment across any paved roadway.

5.25 Not be permitted to keep within buildings or structures any stock of gasoline, kerosene, diesel fuel or similar flammable material. Any such flammables shall be stored in areas arranged by the Contractor, in a manner approved by the Agency and in compliance with the Department of Environmental Quality's AST Regulations.

5.26 Be responsible for shoring as required to prevent damage to any adjacent structures, utilities or property.

5.27 Repair to the satisfaction of the Agency, at the Contractor's own expense, any damage to adjacent structures, utilities or property.

5.28 Allow and provide the Agency access to the work for inspection whenever it is in preparation or progress, and provide proper facilities for such access and inspection.

5.29 The drawings and specifications illustrate the general character and scope of the work. Any additional detail and other information deemed necessary by the Agency will be furnished to the Contractor when and as required by the work.

5.30 Where the word "similar" appears on the drawings, it shall be interpreted in its general sense and not as meaning identical, and all details shall be worked out in relation to their location and their connection with other parts of the work.

5.31 The specifications are divided into several parts for convenience only, since the entire specifications must be considered as a whole. The divisions of the specifications are not intended to control the Contractor in dividing the work among subcontractors or to limit the work performed by any trade. The Contractor shall be responsible for the coordination of the trades, subcontractors and vendors engaged upon this work.

5.32 The Contractor shall verify measurements or dimensions shown on the drawings at the site. Where there are discrepancies, the Agency shall be consulted.

5.33 The Contractor shall maintain at the site, one copy of all drawings, specifications, addenda, change orders and other modifications, in good order and marked to record all changes made during construction.

5.34 An Affidavit of Payment and Claims and Certifications of Materials (DMLR-AML-314) form certifying that all materials meet or exceed the specifications of the Contract shall be completed and submitted with the final Application of Payment.

5.35 Before performing any excavation, contact Miss Utility, (800) 552-7001, to confirm the location of any below ground utility lines in the work area. The affected utility companies will mark the location of the underground lines within 48 hours after being notified. If the work is to continue more than 15 days, they will return to remark the utility lines as requested. Further details about the Miss Utility program and its requirements are available at the website www.missutilityofvirginia.com.

Section 6: Work by Agency

The Agency will:

6.1 Furnish the site in an "as is" condition.

6.2 Provide limited area, not necessarily adjacent to the site, for storage purposes and for the Contractor's offices, change houses, sanitary stations, and tool and storage sheds. The Contractor shall make and maintain access to the facilities.

6.3 Furnish all design and detail drawings necessary to complete the specified work. One set of Plans and Specifications will be sold to interested bidders. Additional sets of Plans and Specifications will be issued to the selected Contractor as needed.

6.4 Designate in the field the manner in which the work is to be performed, as conditions warrant, if not detailed in the Specifications or shown on the Drawings.

6.5 Inspect the work during its progress. No work will be considered completed until approved by the Agency.

TECHNICAL SCOPE FOR GLADE MOUNTAIN RECLAMATION PROJECT

1. MOBILIZATION

1.A SCOPE

This item shall consist of the mobilization and demobilization of the Contractor's forces and equipment necessary for performing the work required to complete the Contract.

1.B PROCEDURE

1.B.1 It shall include the purchase of contract bonds (if applicable), ***eVA***, insurance, transportation of personnel, equipment and operating supplies to the site, and other preparatory work at the site. It shall also include making necessary repairs to any access roads.

1.B.2 It shall not include mobilization for any specific item of work for which payment for mobilization is provided elsewhere in the Contract.

1.B.3 This item covers mobilization for work required by the Contract at the time of award. If additional mobilization costs are incurred during performance of the contract as a result of changed or added items of work for which the Contractor is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the items of work changed or added.

1.B.4 **The contractor shall maintain all Forest Service and privately owned gates and roads during construction. All gates and roads shall be left in equal to or better condition than pre-reclamation activities. The cost for maintaining, repairing or replacing the said gates or damaged road surfaces shall be incidental to Mobilization.**

1.B.4 **Any impacts to paved road surfaces by the Contractor shall be repaired by the contractor at the contractor's expense.**

1. C MEASUREMENT AND PAYMENT

1.C.1 Measurement: Measurement for MOBILIZATION shall be Lump Sum for the job as shown in the project Scope of Work.

1.C.2 Payment: Total payment for MOBILIZATION shall not exceed 10% of the Base Bid amount. Exceeding this limit may be basis for rejection of the bid as non-responsive. The Base Bid amount shall be the total of all sub-items on the Bid Schedule, less the amount for Mobilization.

Payment for MOBILIZATION shall be the Lump Sum amount listed on the Bid Schedule and shall constitute full compensation for all labor, equipment, materials and incidentals necessary to complete the work.

Payment for MOBILIZATION shall be made on the basis of 50% of the Lump Sum amount on the first invoice submitted and the remaining 50% on the final invoice.

2. SITE PREPARATION

2.A SCOPE

This item shall include all clearing, grubbing and general site preparation work of all areas affected by the project. The work shall consist of the cutting and disposal of trees, tree stumps, brush, snags, logs, trash and combustible or compressible debris from all areas where excavation work is to take place. It shall include the cutting and disposal of trees and vegetative growth from other areas incidental to construction for whatever reasons, with exception to the access roads. Site preparation shall further include the complete removal and disposal of all trash, garbage, scraps and debris located within the project limits as directed by the Inspector.

2.B PROCEDURE

2.B.1 Project Limits: The limits of the areas to be worked shall be marked by stakes, flags, and/or other suitable methods. Site preparation shall be strictly limited to the worksite areas shown on the drawings, unless otherwise directed by the Inspector. The Contractor shall incorporate any adjacent areas reasonably necessary to perform the work when directed to do so by the Inspector.

2.B.2 Disposal: Trees, stumps, logs, and brush which are cleared, grubbed, stripped or otherwise included as part of this work shall be windrowed adjacent to the eroded channel. Once the existing gabion channel is repaired and no water is flowing through the eroded channel, the windrowed material shall be pushed into the eroded channel.

Disposal of metals and other debris associated with reclaiming the site shall be done in compliance with all applicable Federal, State and Local laws and regulations. **All material or equipment associated with reclaiming the site shall be removed from the site to an approved landfill or recycled and sold as scrap metal.** Should materials be encountered which are considered hazardous or toxic (transformers containing PCB's, Asbestos Containing Materials (ACM), lead-acid batteries, etc.), the Agency shall be notified immediately. Work shall not proceed until any questionable material has been identified, appropriate cleanup or containment plans developed and approved, and approval obtained from the necessary regulatory agencies.

2.B.4 Access: Any impacts to paved road surfaces by the Contractor shall be repaired by the Contractor at the contractor's expense. Also, see Section 3 Access Roads for additional requirements.

2.C MEASUREMENT AND PAYMENT

2.C.1 Measurement: Measurement for SITE PREPARATION shall be on a per job basis for all work accepted and approved by the Agency.

2.C.2 Payment: SITE PREPARATION shall be based upon the Lump Sum amount on the Bid Schedule. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals necessary to complete the work.

3. ACCESS ROADS

3.A SCOPE

This item shall consist of the construction, upgrade, and maintenance of all access roads necessary to access the features to be reclaimed. Work will include grading, ditching, miscellaneous drainage work, the addition of aggregate, and the installation of gates. There are approximately **8,615 linear feet of ACCESS ROAD - Type "A"**, **4,600 linear feet of ACCESS ROAD - Type "B"**, **1,775 linear feet of ACCESS ROAD - Type "C",** and **300 linear feet of ACCESS ROAD – TYPE "D"**. The lengths of roads listed above are for reference only. See the

Location Map for the location of the access roads described above. The contractor shall leave all existing access roads in at least as good or better condition than the pre-construction condition. All Type "A" and Type "B" roads shall be left in a condition that provides for easy vehicular egress and ingress. Grading and cut/fill for the Type "C" and Type "D" roads shall be held to the absolute minimally necessary to safely access the features to be reclaimed and to eliminate impacts to down gradient properties and streams due to erosion. No grading or cuts/fills shall be made that will de-stabilize a slope or cause erosion. All roads utilized by utility companies shall remain open at all times unless the contractor coordinates temporary closures with all applicable companies. The cost of temporary closures shall be incidental to Site Preparation.

3.A.1 **Type "A":** This type of access road is an existing privately owned road with an aggregate surface. This type of access road should require minimal to no grading and the addition of aggregate only as necessary to safely access the features to be reclaimed. The landowner is receiving 200 tons of #57 aggregate at the end of the project in return for allowing use of the road. The addition of any aggregate beyond the 200 tons requested by the landowner shall be approved by the Project Inspector. Any existing drainage features associated with the road surface such as shoulders, ditches, cross pipes, etc. shall be maintained to pre-existing conditions. All Type "A" Access Roads shall be left in a condition that provides for easy vehicular egress and ingress. There are approximately 8,615 linear feet of Type "A" Access Roads.

3.A.2 **Type "B":** This type of access road is an existing National Forest access road with an aggregate surface. This type of access road should require minimal to no grading and the addition of aggregate only as necessary to safely access the features to be reclaimed. The addition of aggregate shall be approved by the Project Inspector. Any existing drainage features associated with the road surface such as shoulders, ditches, cross pipes, etc. shall be maintained to pre-existing conditions. All Type "B" Access Roads shall be left in a condition that provides for easy vehicular egress and ingress. There are approximately 4,600 linear feet of Type "B" Access Roads.

3.A.2 **Type "C":** This type of access road is an existing National Forest Service access road with no surface. Type "C" Access Roads are the section of road between Type "B" roads and the upper project site. This type of access road will likely require grading and the addition of #1 coarse aggregate only as necessary to safely access the features to be reclaimed. The Type "C" Access Road for shall be left in a condition that allows access to the site with a 4-wheel drive passenger vehicle. There is approximately 1,775 linear feet of Type "C" Access Roads.

3.A.3 **Type "D":** This type of access road is a non-existing access road that will need to be constructed to reach the immediate job site. Type "D" Access Roads are the section of road between Type "C" roads and the immediate work area. This type of access road will require tree removal, grading, minor cuts/fills, the installation of a culvert stream crossing and the addition of #1 coarse aggregate at a depth of 4 inches to allow for future 4 wheel drive vehicle access. A 24 inch diameter high density polyethylene (HDPE) culvert will need to be installed across a creek in order to reach the site. There is approximately 300 linear feet of Type "D" Access Roads.

3.B MATERIAL

3.B.1 Aggregate: Aggregate to be used shall be VDOT #1 Coarse Aggregate and VDOT #57 Aggregate, as specified in Section 203 of the 2016 VDOT Road and Bridge Specifications.

3.C PROCEDURE

3.C.1 Alignment: The Drawings show the approximate route of Type "D" access road. In general, this route has been chosen over existing trails or alignments, which normally display good drainage. These routes have also been selected to follow a preexisting overgrown roadbed and to reduce the overall impacts. During access road construction, the Contractor shall select the route, which results in the removal of the fewest trees possible. All trees larger than 12 inches in diameter, that have to be cut for access, shall be flagged by the contractor and approved by the Agency prior to cutting. Type "A," Type "B," and Type "C" access roads are existing. No changes in road route or alignment should be made by the Contractor.

3.C.2 Construction: Access roads shall be graded to remove humps, ridges and holes and shall be ditched to convey storm runoff away from roads. At locations where Type "C" and Type "D" roads cross drainage swales, aggregate material shall be used to stabilize any soft areas. If necessary, the contractor shall make open window cuts to drain any impounded water off the access roads. This work shall be considered part of the Lump Sum cost provided. **Clearing, grading and cut/fill for the Type "C" and Type "D" access roads shall be held to the absolute minimum necessary to safely access the features to be reclaimed and to eliminate impacts to down gradient properties and streams due to erosion.** No grading or cuts/fills shall be made that will de-stabilize a slope or cause erosion. With the exception of Type "A" access roads, all access roads should be topped with #1 aggregate

3.C.3 Maintenance: Access roads shall be maintained at all times during construction to prevent erosion and to provide safe access to the features to be reclaimed. Areas that show excessive rutting shall be graded and additional stone shall be placed. Roads shall be maintained to prevent excessive amounts of mud and debris from being picked up by construction vehicles and deposited on surrounding public streets. The access roads shall be maintained in a condition which will prevent tracking or flowing of sediment onto public right of ways or into waterways. This may require the periodic top dressing with additional stone as conditions demand. **All sediment or other debris tracked onto the public right of way shall be removed immediately.**

3.C.4 Stabilization: All Type "A" and Type "B" access roads shall be left in a condition that provides for easy vehicular egress and ingress in a non 4-wheel drive passenger vehicle. Type "C" and Type D" access road shall be left in a condition that allows access to site with a 4-wheel drive passenger vehicle. **The contractor shall leave all existing access roads in at least as good or better condition than the pre-construction condition.**

3.D. MEASUREMENT AND PAYMENT

3.D.1 Measurement: Measurement for ACCESS ROADS shall be as follows:

- Measurement for the ACCESS ROADS - Type "A", which includes grading, ditching, and miscellaneous drainage work, shall be the Lump Sum listed on the Bid Schedule for each project area. Aggregate will be measured as indicated in the Aggregate Section. Addition of aggregate must be approved by the Project Inspector and will be paid for under Aggregate.

- Measurement for the ACCESS ROADS - Type "B" which includes grading, ditching, and miscellaneous drainage work, shall be the Lump Sum listed on the Bid Schedule for each project area. Aggregate will be measured as indicated in the Aggregate Section. Addition of aggregate must be approved by the Project Inspector and will be paid for under Aggregate.

- Measurement for the ACCESS ROADS - Type "C", which includes clearing, grading, ditching, miscellaneous drainage work shall be the Lump Sum listed on the Bid Schedule for each project area. Aggregate will be measured as indicated in the Aggregate Section.

- Measurement for the ACCESS ROADS - Type "D", which includes clearing, grading, ditching, miscellaneous drainage work, the cost of the 24 inch HDPE culvert, the installation of the culvert, and the installation of aggregate shall be the Lump Sum listed on the Bid Schedule for each project area. Aggregate will be measured as indicated in the Aggregate Section.

3.D.2 Payment: Payment for ACCESS ROADS shall be as follows:

- Payment for the ACCESS ROADS - Type "A", which includes grading, ditching, and miscellaneous drainage work, shall be based upon the unit cost amount entered on the Bid Schedule and the actual linear feet graded and accepted by the Agency. Aggregate for the ACCESS ROADS - Type "A" will be paid as detailed in Section 16 - Aggregate of the specifications. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals necessary

to complete the work as described above.

- Payment for the ACCESS ROADS - Type "B", which includes grading, ditching, and miscellaneous drainage work, shall be based upon the unit cost amount entered on the Bid Schedule and the actual linear feet graded and accepted by the Agency. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals necessary to complete the work as described above. Aggregate for the ACCESS ROADS - Type "B" will be paid as detailed in Section 16 - Aggregate of the specifications. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals necessary to complete the work as described above.

- Payment for the ACCESS ROADS - Type "C", which includes grading, ditching, and miscellaneous drainage work, shall be based upon the unit cost amount entered on the Bid Schedule and the actual linear feet graded and accepted by the Agency. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals necessary to complete the work as described above. Aggregate for the ACCESS ROADS - Type "C" will be paid as detailed in Section 16 - Aggregate of the specifications. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals necessary to complete the work as described above.

- Payment for the ACCESS ROADS - Type "D", which includes grading, ditching, and miscellaneous drainage work, shall be based upon the unit cost amount entered on the Bid Schedule and the actual linear feet graded and accepted by the Agency. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals necessary to complete the work as described above. Aggregate for the ACCESS ROADS - Type "D" will be paid as detailed in Section 16 - Aggregate of the specifications. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals necessary to complete the work as described above.

4. EROSION AND SEDIMENT CONTROL

4.A SCOPE

This item shall consist of furnishing, installing, maintaining and removing erosion and sediment controls as detailed on the Drawings, and as directed by the Project Inspector.

4.B MATERIALS

4.B.2 Silt Fence: Shall be installed on the downhill side of the work area and remain in place and functional until up gradient areas discharging to the fence are stabilized. Silt fence filter fabric shall be specifically recommended for this purpose by the manufacturer and shall meet or exceed the following specifications:

Property	**Value**
Bursting Strength (ASTM D751)	150 psi
Grab Strength (ASTM D1682)	100 psi
Permeability	0.02 to 0.03 cm/sec

Post must have a minimum length of 5 feet and shall have a minimum diameter of 2 inches when oak is used and 4 inches when pine is used. Post shall be driven a minimum of 12 inches into the ground.

4.B.3 Turbidity Curtain: Shall be installed around the inlet feeding the lower pond on the bank of either side of the inlet, forming a "U" shape around the inlet. The turbidity curtain shall be specifically recommended for the specific application by the manufacturer and shall meet or exceed the following specifications:

Property	Value
Type	I
Depth	3 feet
Length	50 feet

4.C INSTALLATION

Turbidity Curtain should be installed first, before any work is done on the site. All erosion and sediment control devices shall be in place and operational prior to starting the excavation or construction activities. Appropriate downstream controls including the turbidity curtain and silt fence shall be utilized to filter all storm runoff and construction discharge water such that no sediment laden water leaves the site. Silt fence shall be placed around the downhill perimeter of the work area to capture any sediment laden flow that may flow downhill in a storm event. Geotextile fabric used for silt fences shall be provided, and posts shall not be spaced more than 6 feet apart. Posts shall be uniformly installed with an inclination toward the potential silt load area of at least 2 degrees but not more than 20 degrees. Vertical wood posts for either type of structure shall be protected by means of a metal cap or other device to prevent damage when hammers are used to drive the posts into the ground. Attaching fabric to existing trees will not be permitted. Fabric shall be firmly secured to the post. The bottom of the fabric shall be entrenched in the ground a minimum of 8 inches. Temporary silt fence may also be entrenched using a slicing method with a minimum of 8 inches sliced into the ground. Fabric may be spliced only at support posts and with an overlap of at least 6 inches. The top shall be installed with a 1-inch tuck or reinforced top end section. All erosion and sediment controls shall be installed in accordance with the details on the drawings.

Installation of the turbidity curtain shall be in accordance with the manufacturer's recommendation for the product. One end of the turbidity curtain shall be securely attached to the pond bank on the outer side of the pond inlet per the manufacture's recommendation. The curtain should be stretched across the pond and secured on the bank on the opposite outer side of the pond inlet. The curtain shall then be opened so that the curtain extends to the bottom of the pond. A small boat may be required to install the turbidity curtain. The curtain shall be maintained throughout the project in order to insure continuous protection of the pond.

4.D MAINTENANCE

Erosion and sediment control devices and measures shall be maintained in a functional condition at all times. Silt fence and turbidity curtain shall be maintained in a functionally sound condition and accumulations of silt shall be promptly removed when the capacity of the fence has reached 50 percent. Following the usefulness of silt fence it shall be removed and disposed of in an approved location. The turbidity curtain is to remain in place after the project and will be removed by the National Forest Service at a later date.

The contractor shall comply with all regulations governing storm water discharges from construction activities. The contractor shall implement and erosion and sediment control plan throughout the duration of construction activities.

4.E MEASUREMENT AND PAYMENT

4.E.1 Measurement: TURBIDITY CURTAIN shall be measured per each curtain. This price shall include furnishing, installing, maintaining, and removal of all materials. SILT FENCE shall be measured on a Linear Foot basis for the length of sediment control actually installed, maintained and removed.

4.E.2 Payment: Payment for TURBIDITY CURTAIN shall be on a per each basis installed and approved by the Agency and the Unit Price listed in the Bid Schedule. Payment for SILT FENCE shall be based upon the Linear Feet accepted and approved by the Agency and the Unit Price listed in the Bid Schedule. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals required to install, maintain and remove the items specified.

5. AGGREGATE

5.A. SCOPE

This item shall consist of the preparation, haulage, placement, and shaping of the aggregate for access roads, base for work site and as directed by the Agency.

5.B. MATERIAL

5.B.1. VDOT #57 – Coarse Aggregate proposed for this work shall conform to #57 Stone as specified in the VDOT specifications for Coarse Aggregate found in Section 203 of the 2016 VDOT Road and Bridge Specifications.

5.B.2. VDOT #1 – Coarse Aggregate proposed for this work shall conform to #1 Stone as specified in the VDOT specifications for Coarse Aggregate found in Section 203 of the 2016 VDOT Road and Bridge Specifications.

5.B.3. Gabion Stone – Gabion Stone proposed for this work shall conform to Gabion Stone as specified in the VDOT specifications for Gabion Stone found in Section 204 of the 2016 VDOT Road and Bridge Specifications.

5.B.3.1. Gabion Stone shall be durable and free from seams and cracks. Stone shall weigh between 4 and 30 pounds except that approximately 5 percent of the individual stones may weigh less than 4 or more than 30 pounds. At least 50 percent of the stone shall weigh more than 10 pounds.

5.B.4. Class I Riprap – Class I Riprap proposed for this work shall conform Class I Riprap as specified in the VDOT specifications for Class I Riprap found in Sections 204 and 414 of the 2016 VDOT Road and Bridge Specifications.

5.B.4.1. Stone for riprap and bedding shall be sound, durable, and free from seams, cracks, and other structural defects. Riprap stone and bedding exposed to the wave action of water shall be of igneous or metamorphic origin. Riprap bedding shall be crushed stone, minimum Grade B.

5.B.4.2. Stones shall weigh between 50 and 150 pounds each. At least 60 percent shall weigh more than 100 pounds, and approximately 10 percent may weigh 50 pounds or less.

5.C. PROCEDURE

5.C.1. Aggregate shall be transported and handled to prevent dirt and debris from entering the stone; and to prevent spalling and breakage of the stone. Aggregate shall be delivered and installed **only as outlined in the Technical Scope and plans and as APPROVED by the Project Inspector in the case of Type "A" and Type "B" Access Roads.**

5.D. MEASUREMENT AND PAYMENT

5.D.1. Measurement for aggregate shall be on a per Ton basis for the amount of aggregate delivered and installed. Weight tickets shall be submitted as documentation for payment. Tickets shall include the total weight of the truck empty and loaded and the net stone weight, the name of the project, date, and type of stone.

5.D.2. Payment for aggregate shall be on a Unit Cost basis for the amount of aggregate delivered and accepted by the Agency and the Unit Price listed on the Bid Schedule. Payment shall be full compensation for all labor,

equipment, materials and incidentals required to install the aggregate. **As noted above, aggregate under this section shall be placed only as outlined in these specifications and/or as APPROVED by the Project Inspector. There is no guarantee that all the aggregate in this section and as shown on the bid schedule will be utilized on the project.**

6. REPAIR EXISTING GABION CHANNEL

6.A. SCOPE

This item shall consist of repairing the existing gabion channel. Work will include pulling and removing tree stumps and brushy debris growing in the channel. These areas will be repaired by laying down a geotextile layer and placing riprap in the channel.

6.B. MATERIALS

6.B.1. Geotextile: Geotextile shall comply with the requirements of AASHTO M288, Table 3-Separation Geotextile Property Requirements, for apparent opening size and ultraviolet stability and Table 1-Geotextile Strength Property Requirements, Class 2, for grab strength and puncture strength.

6.C. INSTALLATION

As indicated on the drawings, there is a badly eroded area where the eroded channel is encroaching on the gabion channel. This area shall be reinforced with Class I riprap as shown in the attached drawings. Riprap will be placed in the eroded area and pulled against the bank adjacent to the gabion channel. The out slope of the riprap shall be sloped to a 2H:1V slope.

Any trees, stumps, roots, etc growing the in the existing gabion channel will be pulled from the channel to prevent regrowth from rootstock. Other debris in the channel shall be cleaned out to allow water to flow freely through the channel. The sections of channel that require excavation to remove root debris will be cleaned and graded, geotextile will be applied in the cleaned section and Gabion Stone applied to tie in the repaired section of channel with the existing gabion channel. The final result should be a continuous, cohesive channel that is free of roots, plant debris, allowing water to flow freely through the channel. Any debris removed from the channel shall be placed in the eroded channel adjacent to the existing gabion channel.

6.D. MEASUREMENT AND PAYMENT

6.D.1. Measurement: Measurement for REPAIR EXISTING GABION CHANNEL shall be lump sum for the job as shown in the project Scope of Work. GEOTEXTILE shall be measured on a square foot basis for the area of geotextile actually installed. Aggregate will be measured as outlined in the aggregate section

6.D.2. Payment: Payment for REPAIR EXISTING GABION CHANNEL shall be the Lump Sum amount listed on the Bid Schedule and shall constitute full compensation for all labor, equipment, materials and incidentals necessary to complete the work. Payment for GEOTEXTILE shall be based upon the Square Feet accepted and approved by the Agency and the Unit Price listed in the Bid Schedule. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals required to install the items specified. Aggregate for the REPAIR EXISTING GABION CHANNEL will be paid as detailed in Section 5 - Aggregate of the specifications

7. REPAIR STREAM/CHANNEL JUNCTION

7.A. SCOPE

This item shall consist of rerouting the existing stream channel and tying it into the existing gabion channel. The stream channel will be straightened and banks stabilized by installing gabion baskets.

7.B. MATERIALS

7.B.1. Gabion Baskets: Gabions shall have a uniform depth and height of at least 36 inches and length of at least 72 inches. Their dimensions shall be within ±3 percent of the manufacturer's stated sizes. Wire mesh shall conform to Section 223.02(a) of the 2016 VDOT Road and Bridge Specification Handbook. Selvedge (or perimeter) wire shall be at least 0.148 inch in diameter (9 gage) and shall conform to Section 223.02(a) of the 2016 VDOT Road and Bridge Specifications Handbook for wire mesh. Tie and connection wire shall conform to the requirements for the wire used in the mesh except that it shall be not more than two gages smaller. Gabion stone shall conform to Section 204 of the 2016 VDOT Road and Bridge Specifications Handbook. Additional information on the gabion stone is included in Section 5 - Aggregates.

7.B.2. Geotextile: Geotextile shall comply with the requirements of AASHTO M288, Table 3-Separation Geotextile Property Requirements, for apparent opening size and ultraviolet stability and Table 1-Geotextile Strength Property Requirements, Class 2, for grab strength and puncture strength.

7.C. INSTALLATION

The stream channel will be straightened and tied into the existing lower gabion channel. Channel realignment shall be field located with approval of the inspector. The head of the existing gabion channel is at a higher elevation than the stream channel. The head of the gabion channel will need to be partially removed and regraded to promote the flow of water into the channel. After rerouting the channel, Geotextile wide enough to span the creek bottom and wrap behind the sides of the gabion baskets should be installed. Geotextile should be wrapped onto the banks of the upstream side of the creek and topped with Gabion stone to hold in place and prevent water from washing behind the baskets. Assembly and installation of the gabions should follow the procedures set forth in Section 610.03 of the 2016 VDOT Road and Bridge Specifications Handbook. Gabion stone should be applied across the bottom of the stream bed. Gabion baskets should be applied on either side of the stream channel and abut against the head of the existing gabion channel. Material excavated from one bank should be used to backfill behind baskets on the opposing bank. Any excess material excavated should be used to backfill the head of the eroded channel. The streambed and any exposed work areas around the junction shall be stabilized immediately upon completion of the work or if work is suspended for more than 14 days.

7.D. MEASUREMENT AND PAYMENT

7.D.1. Measurement: Measurement for REPAIR STREAM/CHANNEL JUNCTION shall be lump sum for the job as shown in the project Scope of Work. GABION BASKETS shall be measured per each basket purchased GEOTEXTILE shall be measured on a square foot basis for the area of geotextile actually installed. Aggregate to fill baskets will be measured as outlined in Section 5 – Aggregate.

7.D.2. Payment: Payment for REPAIR STREAM/CHANNEL JUNCTION shall be the Lump Sum amount listed on the Bid Schedule and shall constitute full compensation for all labor, equipment, materials and incidentals necessary to complete the work. Payment for GEOTEXTILE shall be based upon the Square Feet accepted and approved by the Agency and the Unit Price listed in the Bid Schedule. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals required to install the items specified. Aggregate for the REPAIR STREAM/CHANNEL JUNCTION will be paid as detailed in Section 5 - Aggregate of the specifications.

8. CLOSURE OF DRAINAGE STRUCTURE

8.A. SCOPE

This specification covers the construction activities, equipment, and accessories necessary to safely and properly close a drainage structure within the designated project area. The structure closure will be constructed onsite. Details on closure methods are described below.

8.B. MATERIALS FOR CLOSURE

The Contractor shall certify that all materials used in the construction of the closure meet the requirements of these specifications:

8.B.1. Structural Steel: Type W6x12 I-beam

8.B.2. Welded Steel Grating: Grating shall be McNichols GW 100A (McNichols item: 6401180122) or an approved equal with the following specifications: welded and galvanized steel bar grate with cross bars at 4" on center and 1" x 1/8"bearing bars spaced 1-3/16" on center.

8.C. INSTALLATION

The area around the drainage structure shall be prepared for closure as described in Section 2. The preparation shall include removal of material from the concrete surround and as far out on all sides of the structure to install the closure. Material around the opening shall only be removed to the extent necessary as required to install the closure.

The attached drawings show general closure structure configurations. Structural steel shall be laid across the structure with 3 foot center to center spacing. Beams shall be attached on the concrete surround using an approved concrete anchoring system, with two minimum 0.5 inch diameter lag bolts on each end of the beam. Welded steel grating panels should be placed and attached on top of the structure to meet the specifications shown on the attached drawings and fastened with McNichols type CB saddle clip, or approved alternative.

The Contractor shall make necessary adjustments to ensure that a competent closure structure is constructed that will prevent access by the public. The Contractor shall provide sufficient labor, materials and equipment to fabricate the closure in-place. It is anticipated this work will require portable welding and cutting equipment.

8.D. MEASUREMENT AND PAYMENT

8.D.1. Measurement: Measurement for CLOSURE OF DRAINAGE STRUCTURE shall be lump sum for the job as shown in the project Scope of Work.

8.D.2. Payment: Payment for CLOSURE OF DRAINAGE STRUCTURE shall be the Lump Sum amount listed on the Bid Schedule and shall constitute full compensation for all labor, equipment, materials and incidentals necessary to complete the work.

9. REPAIR LOWER POND INLET

9.A SCOPE

This item shall consist of repairing the inlet feeding the lower pond. Water was previously feed through a corrugated metal channel. The channel has become clogged and water is overflowing the corrugated metal channel, and has washed a new channel through the pond bank into the pond. Work will include lining the new channel with geotextile fabric and applying Gabion Stone over top of the fabric. The length of channel is approximately 30 feet.

9.B MATERIALS

9.B.2 Geotextile: Geotextile shall comply with the requirements of AASHTO M288, Table 3-Separation Geotextile Property Requirements, for apparent opening size and ultraviolet stability and Table 1-Geotextile Strength Property Requirements, Class 2, for grab strength and puncture strength.

9.C INSTALLATION

Any trees, stumps, roots, etc growing the in the eroded inlet channel will be pulled from the channel to prevent regrowth from rootstock. The minimum channel bottom width shall be 3 feet and final channel depth 1 foot. It is not anticipated that the contractor will need to widen the channel. Channel banks shall be sloped to a 2H:1V slope. Geotextile will be laid in the cleaned channel and gabion stone applied over the fabric. No changes should be made to the corrugated metal channel. The corrugated metal channel should be left in place so that the mental channel continues to overflow into the riprap channel. Channel specifications are shown in the attached drawings.

9.D MEASUREMENT AND PAYMENT

9.D.1 Measurement: Measurement for REPAIR LOWER POND INLET shall be lump sum for the job as shown in the project Scope of Work. GEOTEXTILE shall be measured on a square foot basis for the area of GEOTEXTILE installed. Aggregate will be measured as outlined in Section 5 - Aggregate of the specifications.

9.D.2 Payment: Payment for REPAIR LOWER POND INLET shall be the Lump Sum amount listed on the Bid Schedule and shall constitute full compensation for all labor, equipment, materials and incidentals necessary to complete the work. Payment for GEOTEXTILE shall be based upon the Square Feet accepted and approved by the Agency and the Unit Price listed in the Bid Schedule. Payment as specified shall be full compensation for all labor, materials, equipment and incidentals required to install the items specified. Aggregate for the REPAIR EXISTING GABION CHANNEL will be paid as detailed in Section 5 - Aggregate of the specifications.

10. REVEGETATION

10.A SCOPE

This item covers the furnishing of all labor, equipment and material for preparing the seedbed, liming, fertilizing, tilling, seeding and mulching on the designated areas. Designated areas encompass all areas and access roads within the project limits.

10.B MATERIALS

10.B.1 Lime: Lime material shall be ground agricultural limestone and shall conform to the minimum Calcium Carbonate Equivalent (C.C.E.) guaranteed by the supplier and approved by the Project Inspector.

10.B.1.a Application: Lime shall be applied as directed by the Project Inspector prior to final grading (tracking) for incorporation into the soil.

10.B.1.b Lime Rate: Lime shall be spread at 2 tons per acre.

10.B.1.c Lime Analysis: Agricultural limestone applied for seeding shall have a minimum C.C.E. of ninety percent (90%). The supplier shall certify this analysis.

10.C SEEDING

All seeding work shall be performed by the Contractor or licensed subcontractor, approved by the Agency, with demonstrated experience and who has the necessary equipment to complete all operations required. Seeding may be accomplished by the use of a hydroseeder or other methods as approved by the Agency.

10.C.1 Seeding Schedule

Upon completion of grading and liming operations, the areas shall be seeded. Areas eroded by rainfall or crusted over shall be repaired prior to seeding.

The Project Inspector shall approve all seeding operation time schedules. It is recommended that the seeding operations be confined between February 15th to June 15th, and September 1st to November 1st to obtain satisfactory results.

There may be some occasions such as during winter or summer months, when some areas may require temporary seeding. The Project Inspector may require these operations when deemed necessary to prevent erosion and sedimentation. Temporary seed mixtures and rates shall be applied during these periods.

10.C.2 Permanent Seed Mixture

Permanent seed mixture and rates are specified below. The Project Inspector shall approve any substitution or adjustments.

Permanent Seed

Name	Lbs. /Acre
Orchard Grass	25
Annual Ryegrass	10
Red Clover	5
Ladino Clover	5
Birdsfoot Trefoil	5
Redtop grass	3
TOTAL	**53**

10.C.3 Temporary Seeding

Temporary seeding mixtures and rates are specified below. The Project Inspector shall approve any substitution or adjustments.

Summer Mixture

Name	Lbs. /Acre
German Foxtail Millet Annual Ryegrass	40 20
TOTAL	**60**

Winter Mixture

Name	Lbs. /Acre
Annual Ryegrass Cereal Rye	20 40
TOTAL	**60**

Permanent seed mixtures shall be applied at the first available seeding period on all temporary seeded areas.

10.D FERTILIZER

10.D.1 Type / Rate

Fertilizer shall be standard commercial product. The rate of fertilizer applied shall be 300 pounds per acre of 16-27-14 or equivalent. Fertilizer may be applied by mechanical spreader or hydraulically by a hydroseeder. Fertilizer and seed may be applied at the same time with a hydroseeder. Water used in a hydroseeder shall have a pH between 6.0 and 9.0.

10.D.2 Inoculant

All leguminous seed shall be inoculated with inoculant specified for use on that particular seed. The Manufacturer's directions for inoculating seed shall be followed. Inoculants shall be applied at double the manufacturer's rate. Inoculant shall be mixed with legume seed prior to mixing with other seeds. Pre-inoculated legume seed from a supplier may be used.

10.E MULCHING

10.E.1 Wood Cellulose or Paper Fiber

Wood cellulose or paper fiber mulch for use with a hydroseeder shall be applied at the rate of 1,500 pounds per acre. This mulch shall be applied along with seed and fertilizer mixtures.

10.E.2 Straw or Hay Mulch

Material for mulching shall consist of dry straw or hay, free of noxious weeds. The mulch shall be reasonably bright in color and shall not be musty, moldy, caked, decayed or very dusty. The application rate for hay or straw shall be 2,000 pounds per acre. Erosion control blanket may be substituted for straw or hay mulch.